8.0 Deactivation and Decommissioning

Safety Criterion: 8.0 - 1

There shall be an approved plan for deactivation of the facility before it is constructed. The objectives of the plan shall be to reduce radiation exposure to Hanford Site personnel and the public both during and following deactivation and decommissioning activities and to minimize the quantity of radioactive waste generated during deactivation, decontamination, and decommissioning. Features and procedures that simplify and facilitate decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method.

Implementing Codes and Standards:

~~BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan~~
~~Section: 1.3.19 Deactivation~~
BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Ad Hoc Implementing Standard for Deactivation and Decommissioning Planning

Regulatory Basis:

DOE/RL-96-0006 4.2.3.3 Radiation Protection-Deactivation, Decontamination, and Decommissioning Design
~~*DOE/RL-96-0006 4.2.3.4 Radiation Protection-Deactivation Plan*~~
DOE/RL-96-0006 4.3.2.3 Radiation Protection-Final Deactivation Plans and Provisions

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Safety Criterion: 8.0 - 2

Facilities shall be designed to simplify decontamination and decommissioning, reduce exposure to site personnel and the public during these activities, and increase the potential for reuse. Features and procedures that simplify and facilitate decontamination, decommissioning, and minimization of contaminated equipment and the generation of radioactive waste during deactivation, decontamination, and decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method or conversion to other use.

Implementing Codes and Standards:

BNFL-5193-SRD-01 TWRS-P Project Safety Requirements Document
Appendix * Ad Hoc Implementing Standard for Deactivation and Decommissioning Planning
G – 10 CFR 835/B2 Occupational ALARA Program
~~BNFL-5193-ISP-01 TWRS-P Project Integrated Safety Management Plan~~
~~Section: 1.3.19 Deactivation~~

Regulatory Basis:

10 CFR 835 Occupational Radiation Protection Location: 1002
DOE/RL-96-0006 4.2.3.3 Radiation Protection-Deactivation, Decontamination, and Decommissioning Design
DOE/RL-96-0006 4.3.2.3 Radiation Protection-Final Deactivation Plans and Provisions

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* Next available appendix number when incorporated into SRD.

APPENDIX *

AD HOC IMPLEMENTING STANDARD FOR DEACTIVATION AND DECOMMISSIONING PLANNING**

* Next available appendix letter when incorporated into SRD
** This appendix is all new; therefore, no redline/strikeout is used.

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1.0 INTRODUCTION

All elements of the RPP-WTP Facility safety approach are applied to the deactivation phase of the project. In addition, the RPP-WTP Facility will incorporate design provisions to facilitate deactivation and final decommissioning as described in the implementing standard G-10 CFR835/B2, *Occupational ALARA Program*, for SRD Criterion 8.0 – 2. These provisions will reduce radiation exposure to Hanford Site personnel and the public during and following deactivation and decommissioning activities and minimize the quantity of radioactive waste generated during deactivation. The purpose of this standard is to define the attributes that must be addressed during the preparation of the deactivation plan to protect both the Hanford Site personnel and the public both during and after the deactivation stage of the project.

2.0 PLAN PREPARATION

A deactivation plan will be prepared prior to construction of the RPP-WTP Facility. The deactivation plan will provide details on how the following activities will be accomplished to achieve a deactivated status for the facility.

1) Verification of the completion of the facility deactivation end point. The term facility deactivation end point refers to the set of conditions that comprise the completion of facility deactivation i.e., radiological, structural, equipment, and documentation. These general end points will be defined in the deactivation plan and a requirement made to determine specific end points. When these end point criteria are met the facility will be in a safe state that can be economically monitored and maintained until final decommissioning.
2) Documentation of the regulatory status, conditions, and inventories of remaining radioactive and hazardous materials and health and safety requirements. After facility construction but before deactivation commences, the deactivation plan will require a hazard evaluation for radiological, nuclear, and process safety be carried out. Safety standards and requirements will be identified to implement the controls to protect against the facility hazards.
3) Identification of the facilities, structures, support systems, and surveillance systems to provide for confinement and monitoring of the remaining contamination, radiation, and other potential hazards. After facility construction but before deactivation commences, the plan will be expanded to describe the activities required to maintain the operability of critical equipment and to maintain the structural integrity of the deactivated facility. It will identify modification requirements to systems for the above purposes.
4) Posting and securing of the facility. After facility construction but before deactivation commences, the plan will be expanded to identify the radiological controls required for the deactivated facility, which will include posting of radiological areas. The need for other safety postings will also be identified.
5) Removal of packaged special nuclear materials and other packaged radiological and chemical materials.
6) Confirmation that security systems and procedures are adequate and in place to prevent unauthorized entry.
7) Waste minimization during the deactivation process.

3.0 SUMMARY

The above requirements for the deactivation plan in combination with measures taken at the design stage of the project will protect the Hanford Site personnel and the public both during and following the deactivation activities.

4.0 DEFINITIONS

Deactivation – Placing the facility in stable and known conditions, identifying hazards, eliminating or mitigating hazards, and transferring programmatic and financial responsibilities from the operating program to the disposition program. Surveillance and maintenance continues to assure public, environment, and worker safety. The facility is in a safe storage mode, with ongoing, low levels of surveillance and maintenance. The general intent is that the facility be unoccupied and locked except for periodic inspections. Radioactive and hazardous materials may remain in the facility and are subject to ongoing regulatory oversight. (DOE/EM-0318, *Facility Deactivation Guide -- Methods and Practices Handbook*, December 1996)

Decommissioning – The process of removing a facility from operation, followed by decontamination, entombment, dismantlement, or conversion to another use. (DOE G 430.1-1A, *Life Cycle Asset Management*)

Decontamination – The reduction or removal of contaminating radioactive material from a structure, area, object or person. Decontamination may be accomplished by (1) treating the surface to remove or decrease the contamination, (2) letting the material stand so that the radioactivity is decreased as a result of natural decay, and (3) covering the contamination to shield or attenuate the radiation emitted. (Health Physics and Radiation Health Handbook, Revised Edition, Bernard Shleien, 1992)

End Point – Specifying and achieving end points is a systematic, engineering way of proceeding from an existing condition to a stated desired final set of conditions in which the facility is safe and can be economically monitored and maintained. (DOE/EM-0318, *Facility Deactivation Guide – Methods and Practices Handbook*, December 1996)